

REMARKS

Upon entry of the present amendment, claims 1-8 remain in the application. Of these, claims 1, 3, 5, and 7 are independent.

The above-identified Office Action has been reviewed, the references carefully considered, and the Examiner's comments carefully weighed. In view thereof, the present Amendment is submitted. It is contended that by the present amendment, all bases of rejection set forth in the Office Action have been traversed and overcome. Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

Claim 1 is amended herein in order to more particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 1 is amended to recite that *a rotational axis for each pump plunger hole is shared by an associated motor plunger hole*. Furthermore, claims 3 and 7 have been rewritten in independent form.

Applicant respectfully submits that all the amendments are supported by the original application and that no new matter has been introduced thereby.

IN THE SPECIFICATION

The specification is amended herein to eliminate duplication of reference numbers. In particular, the reference number 21a was used to refer to both a bearing and a swash plate surface (paragraphs 55, 56 and others). At paragraph 55, the applicant has replaced bearing 21a with bearing 24.

In addition, the reference number 31a was used to refer to both a bearing and a swash plate surface (paragraphs 59, 60 and others). At paragraph 59, the applicant has replaced bearing 31a with bearing 34.

No new matter is added by these amendments. (Figure 1 has also been changed correspondingly).

IN THE DRAWINGS

The drawings have been amended to correct minor informalities. Figure 1 is amended to eliminate two instances of duplicated reference numbers. In particular, duplicated reference number 21a (at the bearing) has been changed to 24, and duplicated reference number 31a (at the bearing) has been changed to 34. In Figure 10, erroneous referenced number 32a has been corrected to recite 22a.

IN THE CLAIMS

Claim Rejections – Section 102 Issues

In the Office Action, the Examiner rejected claims 1, 2 and 4 under 35 USC 102 as being anticipated by Nagatomo (U.S. Pat. No., 5,054,289). In the rejection, the Examiner states that Nagatomo discloses a hydraulic continuously variable transmission (CVT) including a transmission casing 31, axial plunger pump, pump cylinder 3, a plurality of pump plunger holes 6, a plurality of pump plungers 7, an axial plunger motor, a motor cylinder 4, a plurality of motor plunger holes 13, a plurality of motor plungers 14, and a closed hydraulic circuit, wherein circular pump and motor discharge openings 21, 30 are provided at end portions of the pump and motor plunger holes 6, 13 opposite end faces of the pump and motor plungers 7, 14, and the pump and motor discharge openings 21, 30 are smaller than the pump and motor plunger holes and are offset from the center axes of the pump and motor plunger holes toward the rotational axis of the pump and motor cylinders 3,4.

Applicant's Response

Upon review of Nagatomo, the applicant finds that this reference is directed to a hydraulic transmission for transmitting rotational power of an input shaft to an output shaft at varying speed. The applicant agrees, that as broadly claimed, Nagatomo anticipates the applicant's invention as claimed in claim 1. However, the applicant submits that the invention, as disclosed but not claimed, is patentably distinct from that disclosed by Nagatomo.

The applicant has amended claim 1 in order to more particularly point out and distinctly claim what is regarded as the invention, by describing the configuration of the plunger holes of the continuously variable transmission such that each of said pump plunger holes is axially aligned with a corresponding one of the motor plunger holes. This feature is not disclosed or suggested by Nagatomo.

Claims 2 and 4 each depend from claim 1, and therefore incorporate each and every limitation of the base claim. With further respect to claim 2, the applicant notes that the openings 21a, 30a of the cylinder ports 21, 30 of Nagatomo are “cocoon shaped” (col. 12, line 25 and Figs. 5 and 7), and thus do not anticipate the circular-shaped openings claimed by the applicant.

Applicant respectfully suggests that, as presently amended, claims 1, 2, and 4 are patentably distinct from Nagatomo and request reconsideration and withdrawal thereof.

Claim Rejection – Section 103 Issues

In the Office Action, the Examiner rejected claims 5, 6 and 8 under 35 USC 103(a) as being unpatentable over Yasuda et al. (US Pat. No. 6,324,843,) in view of Nagatomo. The Examiner states that Yasuda discloses a hydraulic CVT with a hollow transmission housing 39, a motor casing, a motor pivot member 37, a swash plate plunger pump P, a pump swash plate, a pump cylinder, a plurality of pump plunger holes²⁵, a plurality of [pump] plungers, a swash plate plunger motor M, a motor swash plate 34, a motor cylinder, a plurality of motor plunger holes 32, a plurality of motor plungers, an output shaft 18, a plurality or rotatable bearings 49, 50, circular pump and motor discharge openings provided at end portions of the pump and motor plunger holes 25, 32 at opposite end faces of the pump and motor plungers, the pump and motor discharge openings are smaller than the pump and motor plunger holes, but Yasuda does not disclose that the pump and motor discharge openings offset from the center axes of the pump and motor plunger holes toward the rotational axis of the pump and motor cylinders. The Examiner further states that Nagatomo teaches a hydraulic CVT in which the pump and motor discharge

openings are offset from the center axes of the pump and motor plunger holes toward the rotational axis of the pump and motor cylinders for the purpose of reducing the radial size and weight of the transmission (Nagatomo col. 12, line 2-col. 13, line 68), and that it would have been obvious to modify Yasuda by the teaching of Nagatomo since both inventions are directed to hydraulic CVT's.

Applicant's Response

Upon review of Yasuda, the applicant finds that Yasuda discloses a hydraulic continuously variable transmission, including a hydraulic pump connected to a hydraulic motor via a closed hydraulic circuit. The applicant agrees with the Examiner's interpretation of Yasuda.

However, the applicant notes that in the disclosure of Nagatomo, the openings 21a for the first cylinder port 21, and the openings 30a for the second cylinder port 30, described as "cocoon shaped", are taught to be positioned in a radially-centered position relative to the respective clearances 121, 123 formed between the cylinder block 5 and the respective barrels 3, 4. These openings are formed at an end of the respective cylinder ports 21, 30 opposed to (and spaced apart from by the length of the ports 21, 30) the respective cylinders 6 and 13. Therefore, the applicant submits that Nagatomo lacks a teaching of a specific placement of the openings 21a, 30a relative to the center axes of the cylinders 6, 13 themselves. Although the applicant agrees that Nagatomo discloses openings which are offset relative to the axes of the cylinders 6, 13, this offset is a consequence of the teaching for placement of the port openings 21a, 30a in a radially-centered position relative to the respective clearances 121, 123 formed between the cylinder block 5 and the respective barrels 3, 4, and thus is unrelated to reduction of the radial size and weight of the transmission as put forth by the Examiner.

The applicant further submits that Yasuda does not disclose the specific valve structure of Nagatomo, and thus does not disclose the respective clearances formed between the valve body and the respective barrels. As a result, there is no motivation to modify Yasuda to relocate the axially-aligned openings of Yasuda to a location that is offset therefrom.

The applicant traverses the rejection of claims 5, 6, and 8 and respectfully requests reconsideration and withdrawal thereof. Applicant submits that the total claimed combination, as presently amended, distinguishes over the teachings of Yasuda and Nagatomo, considered either separately or in combination.

Allowable Subject Matter

The Examiner indicated in the above-identified Office Action that claims 3 and 7 would be allowable if rewritten in independent form including all of the limitations of the base claim. The applicant has amended claims 3 and 7 to be in independent form. The applicant respectfully submits that as presently amended, the objections to claims 3 and 7 have been overcome and requests withdrawal thereof.

Conclusion

In conclusion, applicant has overcome the Examiner's rejections of record. While applicant has considered all of the references of record, it is respectfully submitted that the continuously variable transmission as defined by the present claims, is believed to be allowable over all of the prior art of record.

If the Examiner is not fully convinced of the allowability of all of the claims now in the application, applicant respectfully requests that he telephonically contact applicant's undersigned representative to expeditiously resolve prosecution of the application.

Serial No. 10/801,178

Attorney Docket No.: HGM-135-A

The Commissioner is hereby authorized to charge the \$200.00 fee for one additional independent claim in excess of three, to charge any deficiency, and to credit any excess to Deposit Account 50-0744 in the name of Carrier, Blackman & Associates, P.C. A duplicate copy of this sheet is enclosed.

Favorable consideration is respectfully requested.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being sent via first class mail with appropriate postage thereon, addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 4, 2005.



WDB/kmm

IN THE DRAWINGS

The first attached sheet of drawings includes changes to Figure 1. This sheet, which includes only Figure 1, replaces the original sheet including only Figure 1. In Figure 1, duplicated reference number 21a has been changed to 24, and duplicated reference number 31a has been changed to 34.

The second attached sheet of drawings includes changes to Figure 10. This sheet, which includes both Figures 9 and 10, replaces the original sheet including both Figures 9 and 10. In Figure 10, erroneous referenced number 32a has been corrected to 22a.

Attachment: 2 Replacement Sheets (Fig. 1, and Figs. 9 and 10)
 2 Annotated Sheets showing changes (same)



FIG. 9

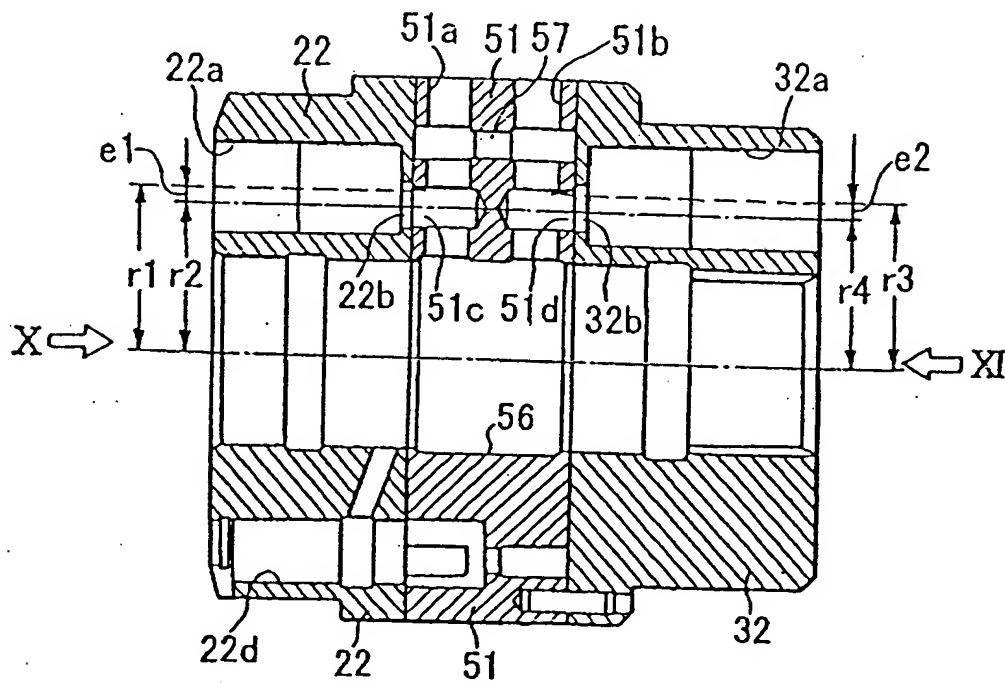
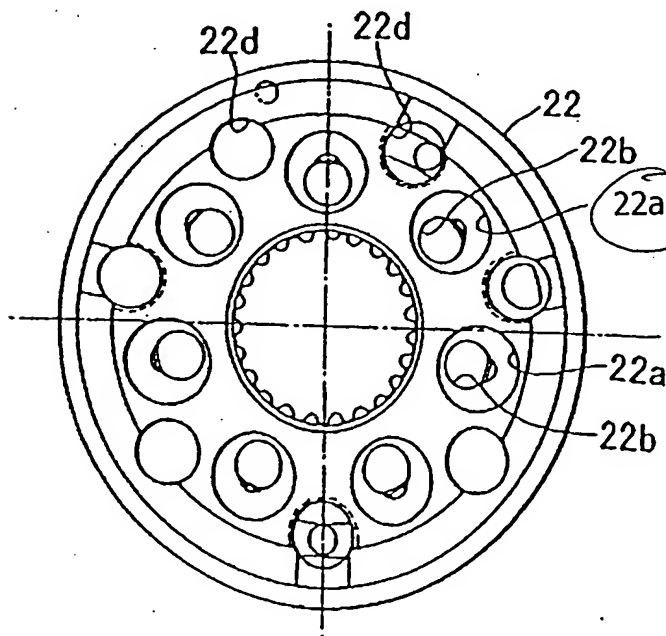


FIG. 10



Corrected
changed "32a"
to
"22a"

